United States
Department of
Agriculture

Forest
Service

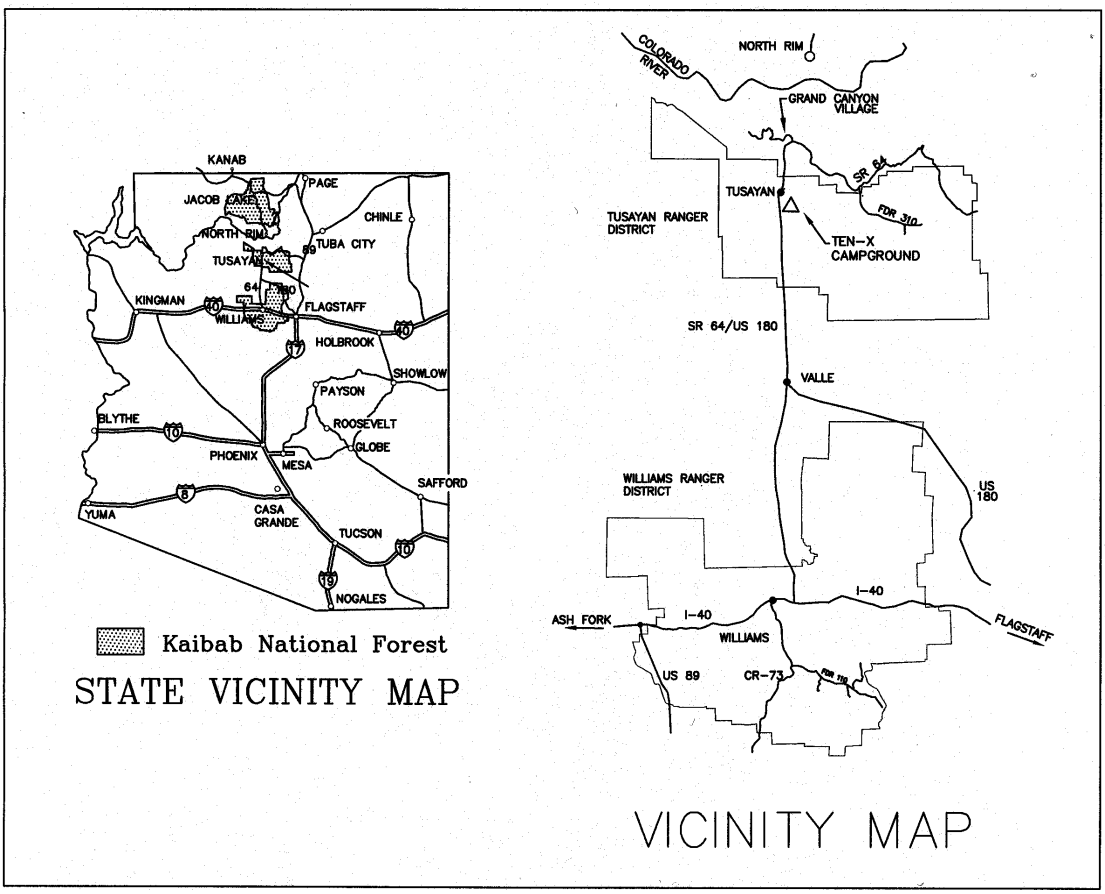
**Southwestern
Region**

Environmental Assessment for Amendment of the Kaibab National Forest Management Plan -- Recreation and Scenery Management

Tusayan and Williams Ranger Districts

Kaibab National Forest

Kaibab National Forest South Zone: Williams and Tusayan Ranger Districts



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Chapter 1 – Purpose and Need

Document Structure

The Forest Service has prepared this Environmental Assessment in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Environmental Assessment discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternative. The document is organized into four parts:

- Introduction: The section includes information on the history of the project proposal, the purpose of and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal and how the public responded.
- Comparison of Alternatives, including the Proposed Action: This section provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on significant issues raised by the public and other agencies. This discussion also includes possible mitigation measures. Finally, this section provides a summary table of the environmental consequences associated with each alternative.
- Environmental Consequences: This section describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area. Within each section, the affected environment is described first, followed by the effects of the No Action Alternative that provides a baseline for evaluation and comparison of the other alternatives that follow.
- Agencies and Persons Consulted: This section provides a list of preparers and agencies consulted during the development of the environmental assessment.
- Appendices: The appendices provide more detailed information to support the analyses presented in the environmental assessment.

Additional documentation, including more detailed analyses of project-area resources, may be found in the project planning record located at the Williams Ranger District Office in Williams, Arizona.

Introduction

This environmental assessment (EA) has been prepared to describe the effects of amending the Kaibab National Forest Land Management Plan (Forest Plan) to update management direction in the areas of outdoor recreation management and scenery management.

A forest management plan is developed to provide direction regarding decisions, goals and objectives made at various times and at multiple levels. As plans and objectives change, or as new information is made available, a national forest may employ the amendment process to refocus parts of a forest plan between revision cycles. The current Forest Plan, developed in 1988, reflects some values and policies that have changed or evolved since its writing. The Kaibab National Forest is proposing to amend its forest plan to more accurately reflect current values regarding outdoor recreation management and scenery management. The proposed amendment is attached to this document as Appendix A.

Based on criteria described in Forest Service Handbook 1909.12, the Forest Supervisor has determined that the proposed amendment to the Forest Plan is a non-significant forest plan amendment. The amendment contains modifications that "do not significantly alter the multiple-use goals and objectives for long term land and resource management," that are "minor changes in the standards and guidelines," and that represent "opportunities for additional management practices that will continue the achievement of the management prescription." This significance analysis is found in the project record.

Although this amendment does not constitute a significant change in Forest management direction, any amendment to a forest plan is considered a major federal action and therefore subject to compliance with the National Environmental Policy Act (NEPA) as amended (42 USC 4321, *et seq*.). Because this amendment to the Forest Plan has been determined to be non-significant, an environmental impact statement (EIS) is not required; however, an EA must be prepared to address the potential impacts of the proposed action and determine if further NEPA analysis is warranted.

This proposal emanated from a "plan to project" analysis for a Recreation Desired Future Condition (RDFC) that was initiated on the Tusayan and Williams Ranger Districts (South Zone) in 1999. The assessment defined the existing condition, desired condition, preliminary issues, and possible management activities that could be undertaken to bring the planning area closer to the desired condition. The Forest Supervisor initiated the NEPA process in October 2003 to amend the Forest Plan to update two recreation management systems, the Recreation Opportunity Spectrum (ROS) and the Scenery Management System (SMS). A proposal was sent to the public on June 7, 2004 for scoping comments.

Background

At the time the Forest Plan was developed in 1988, Recreation and Wilderness Opportunity Spectrum (WOS) mapping was completed and included, with the exception of Sycamore Canyon Wilderness, which referred to Coconino National Forest Land Management Plan direction. Visual Quality Objective (VQO) mapping as described in the Visual Management System (precursor of SMS) was not completed at the time the Forest Plan was developed. Lacking mapped VQO, forest managers identified and assigned VQO to areas of known visual concern (major travel ways, high use forest roads, scenic areas, and recreation sites); these were used in lieu of forest-wide VQO mapping. Areas not mapped were assigned Modification-Maximum Modification VQO. Amendments to recreation management direction were adopted in 1989 (Amendment #1), and 1990 (Amendment #2), however neither of the amendments made changes to the original ROS or VQO mapping. The incomplete VQO mapping has resulted in inconsistent application of VQO for projects across the forest and unmapped scenic resources have been negatively impacted because of the broad-brush approach of assigning VQO to some locations.

In 2000, South Zone recreation managers contracted with Northern Arizona University (NAU) to complete forest visitor use surveys. In the surveys, questions were asked about currently used and desired ROS classes/experiences and preferences for Scenery Management. The results showed many changes and trends from information used in the Forest Plan.

The NAU survey results, issues identified through the Recreation Desired Condition planning effort, and the number of years that have passed since ROS and VQO were mapped, led to the need for recreation managers to revisit and review the existing ROS and VQO maps. Office

review combined with on-the-ground field checks, have prompted the South Zone to propose changes in the Forest Plan Recreation and Wilderness Opportunity Spectrum and VQO maps, as well as to the Forest Plan standards and guidelines associated with these.

Purpose and Need for Action

There is a need to amend the Forest Plan to adopt ROS and SMS goals, direction, standards, maps, monitoring plans, as well as to adopt a Forest Recreation Opportunity Spectrum-Scenery Management System Guidebook (ROS-SMS Guidebook or Guidebook) that is an adjunct to the Forest Plan. This action is needed, because of the current and projected public demand for opportunities to pursue a wide variety of recreation activities, dependent on a diversity of forest settings provided across the ROS spectrum. This ranges from undeveloped, uncrowded and more primitive settings to more intensively managed and developed settings. Opportunities exist to provide a broader spectrum of desired recreational settings on the Tusayan and Williams Districts than is currently provided. There is also public demand for the higher Scenic Integrity Levels (unaltered and appearing unaltered) across the South Zone. In the 16 years since the Forest Plan was developed, there have not been adequate standards, guidelines, or mapping details for "scenery management" to allow for consistent or comprehensive analysis of management proposals or to maintain or improve scenic quality. In 1995, the Forest Service adopted the SMS replacing the VMS, and Forests were directed to begin to implement the system as forest priorities and budgets allowed. Re-evaluating ROS settings and adopting the SMS will help to ensure that the recreational settings and opportunities, and the high quality scenery forest visitors desire, will be maintained into the future.

The original Forest Plan allocations do not currently provide a diverse spectrum of recreational settings to meet current and projected public demands. Tusayan District was mapped predominantly as Semi-Primitive Motorized (SPM) and Roaded Natural (RN). Williams District was mapped predominantly as RN, with five relatively small Semi-Primitive Non-Motorized (SPNM) areas. In the Forest Plan, forest managers assigned Visual Quality Objectives to known recreation locations, but lack of comprehensive mapping and assignment of Modification and Maximum Modification on the majority of the forest has lead to a decrease in the overall scenic quality.

Recent monitoring of ROS settings shows that conditions on the ground do not match the original Forest Plan allocations. The current ROS map offers a relatively narrow range of recreational settings, which were not carefully field-verified. It also appears that the lack of specific, consistent ROS and SMS mapping, setting descriptions, and standards and guidelines have resulted in ineffective, conflicting or unsuccessful management actions. The results are a trend toward more modified settings inconsistent with original ROS mapping, and loss of scenic quality in many areas.

This action responds to the goals and objectives outlined in the Forest Plan, and will help guide projects toward attaining the desired conditions described in that plan. The Forest Plan directs the following actions, but none of these have been comprehensively accomplished to date:

1) Remapping of both VMS and ROS (6/96 Forest Plan, page 39).

2) Chapter 4 – Management Direction, Planning Guidelines for Ecosystem Management Areas (EMA) 2, 10, and 13 includes the direction to "1. Identify, describe, and geographically locate existing conditions in the implementation land area, regarding:

… q. Visual quality objectives.

… w. Recreation opportunity spectrum." (6/96 Forest Plan, page 39)

3) Included in Work Activities, Standards and Guidelines – EMAs 1, 3, 8, 9, 12 & 16 is the direction related to Recreation Planning:

… Update recreation opportunity spectrum inventory and classifications at 5-year intervals beginning in 1990…."

4) Visual Management:
Inventory the existing visual condition (EVC) and visual absorption capability (VAC) of the landscape in this planning period; revise the existing visual resource inventory." (6/96, Forest Plan, page 72).

Proposed Action

The Forest Service proposes to meet the purpose and need by adopting new ROS and SMS mapping, standards, and ROS-SMS Guidebook. These actions will ensure the two complimentary management systems provide effective and coordinated direction, and adequate mapping, standards and guidelines to assist development of management activities to achieve desired conditions. Exceptions to the standards have been included in recognition of different project scales. The exceptions may be used to achieve critical projects and include temporary lowering of SIO levels and extended treatment timelines with documentation. This flexibility is critical to meet the long-range goals of maintaining healthy, sustainable forests on the South Zone, while maintaining and improving recreation values and scenic integrity over time. Additional guidance for project implementation and development of mitigation measures would be provided in the form of the ROS-SMS Guidebook. The proposed action would correlate ROS with SMS to ensure the two systems are complimentary. The proposed monitoring plan would be an integral part of implementing the proposed amendment. Monitoring will assist managers in tracking changes in specific ROS, scenic classes, and scenic integrity. Progress toward desired conditions would be tracked as well as areas where alternate or additional measures should be implemented to achieve or sustain these conditions.

The proposed action is described in more detail in Chapter 2.

Decision Framework

In this decision, the Forest Supervisor will answer the following questions based on the environmental analysis:

Should the Kaibab Forest Plan be amended to include the comprehensive Recreation Opportunity Spectrum and Scenic Integrity/Scenic Class maps, goals and standards as proposed, as modified by an alternative, or not at all?

If he proceeds:

What mitigation measures and monitoring requirements will the Forest Service apply?

Public Involvement

The proposal was listed in the Schedule of Proposed Actions quarterly throughout 2004. A detailed, well-developed proposed action was provided to the public and other agencies for comment during the scoping and notice and comment period on June 7, 2004. In addition, as part of the public involvement process, the agency consulted with the Navajo Nation, the Havasupai, Hualapai, Hopi, Yavapai-Prescott, and Zuni Tribes, about this proposal. A news release was also sent to local media, the Williams-Grand Canyon News published the release on June 16, 2004. The legal notice was published June 7, 2004 in the Arizona Daily Sun. In addition, the KNF website has the news release, documents and comment form available to the public. A second letter was mailed to the original mailing list on June 17, 2004, providing corrected information on the NEPA regulations that apply to Forest Plan amendment decisions.

Two responses were received in response to the proposed action mailing. One was not a comment, but a question regarding NEPA notice and comment and appeal procedures referenced in the scoping letter. This was responded to in the June 17, 2004 letter. The other contained comments on potential developments and alterations to pronghorn antelope habitat.

Issues

The Forest Service separated the issues into two groups: significant and non-significant issues. Significant issues were defined as those directly or indirectly caused by implementing the proposed action. Non-significant issues were identified as those: 1) outside the scope of the proposed action; 2) already decided by law, regulation, Forest Plan, or other higher level decision; 3) irrelevant to the decision to be made; or 4) conjectural and not supported by scientific or factual evidence. The Council for Environmental Quality (CEQ) NEPA regulations require this delineation in Sec. 1501.7, "…identify and eliminate from detailed study the issues which are not significant or which have been covered by prior environmental review (Sec. 1506.3)…"

One response on the proposed action was received after the public scoping and notice and comment period; however, the comments made were still considered. One comment, suggesting minimum amounts of recreational development in open pronghorn habitat made was out of the scope of the proposed action as no development or disturbance is being proposed with this Forest Plan amendment. A second comment, stating a preference for Level 2 considerations in pronghorn areas was determined not significant, as a high level of protection is addressed in the proposed action. (The landscape character mapping layer singled out, and placed a high value on open prairie areas as an important landscape characteristic in determining Scenic Integrity Objectives.) SMS mapping details may be found in the project record.

The Forest did not identify any significant issues during scoping.

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Chapter 2 - Alternatives

This chapter describes and compares the alternatives considered for the South Zone ROS and SMS update project. It includes a description and map of each alternative considered. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision maker. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social and economic effects of implementing each alternative.

Alternatives

Alternatives Considered and Eliminated From Detailed Study

The IDT considered one additional alternative before determining which alternatives should be considered in detail. This alternative eliminated from detailed study entailed adopting the current existing conditions as inventoried and mapped in 2003 as the desired condition ROS map. This alternative was eliminated from detailed study because it would not meet public demands for semi-primitive outdoor recreation settings or for attractive, less developed landscapes on the South Zone of the Forest.

Alternatives Considered in Detail

Alternative 1

No Action

Under Alternative 1, the No Action alternative, the Forest Plan would continue to guide management of the ROS and Visual Management System (VMS) on the South Zone. No Forest Plan amendment would be implemented to accomplish programmatic goals. Figures 1, 2 and 3 display the existing ROS and Visual Quality Objective (VQO) mapping. Table 1 displays the current acreages of ROS and VQO on the Tusayan And Williams Ranger Districts.

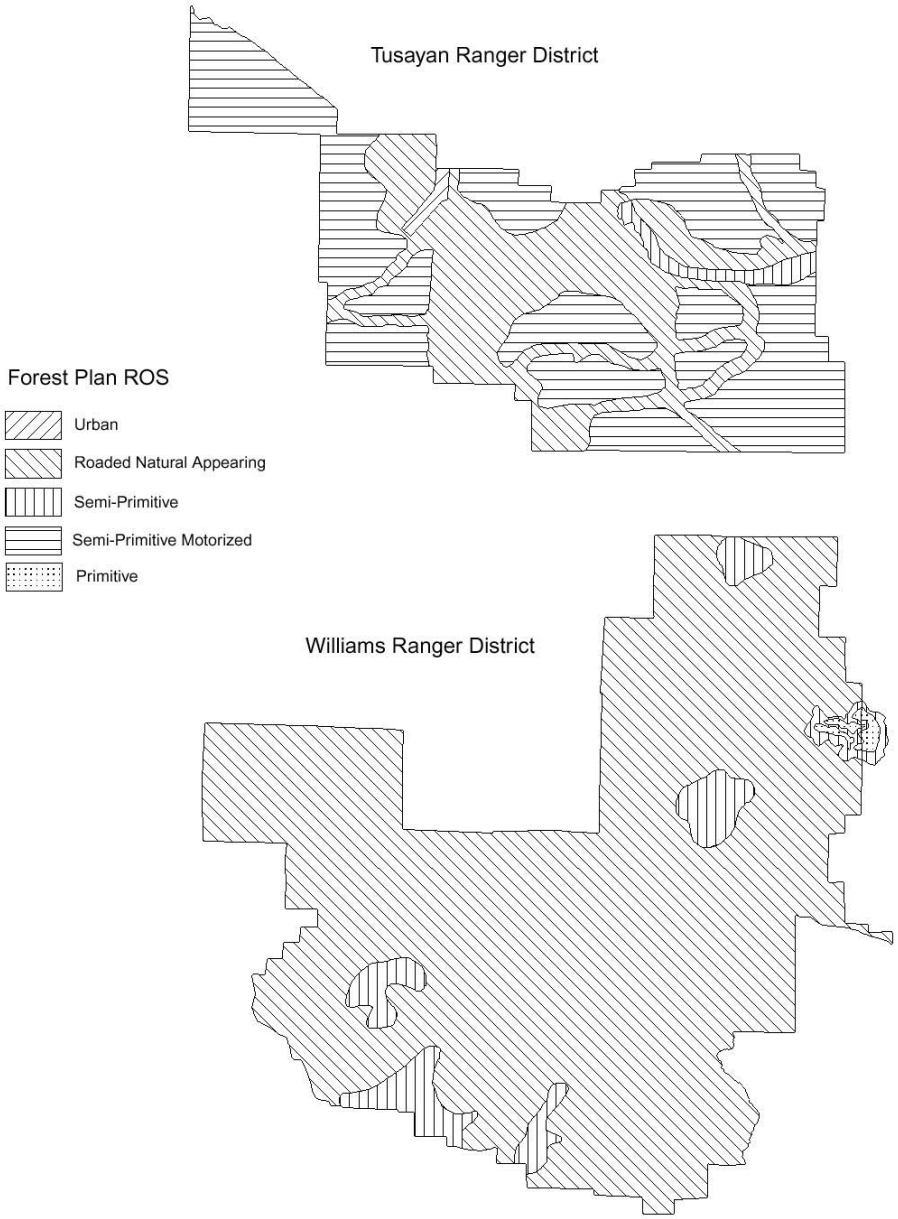

Figure 1. Map of Forest Plan ROS

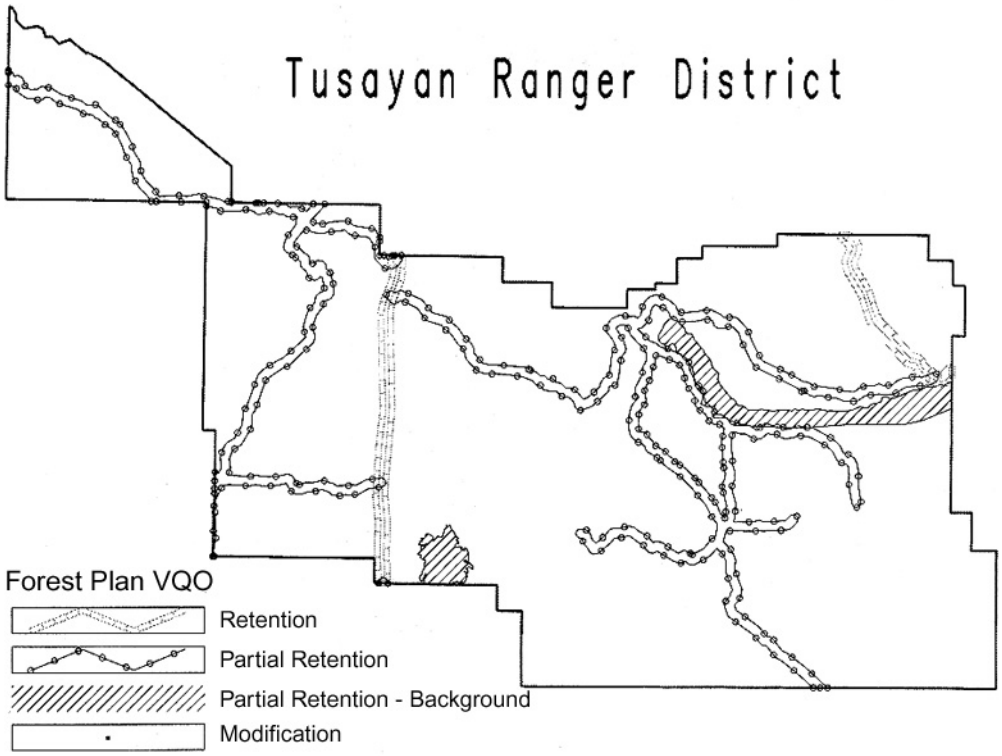

Figure 2. Forest Plan Visual Quality Map for Tusayan Ranger District

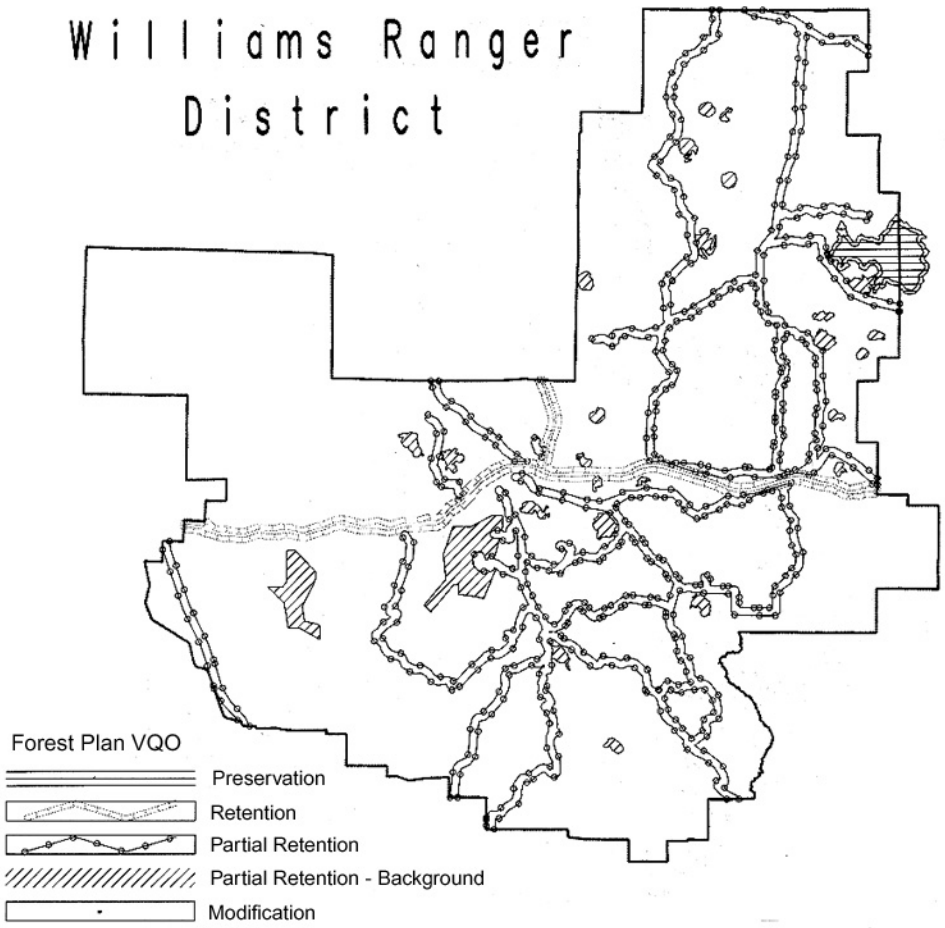

Figure 3. Forest Plan Visual Quality Mapping for Williams Ranger District

Table 1. Forest Plan ROS Acres By District.

ROS Class	Tusayan District Forest Plan ROS Acres	Williams District Forest Plan ROS Acres
Urban	2335*	0
Rural	0	0
Roaded Natural Appearing	126,887	552,140
Semi-Primitive Motorized	193,737	0
Semi-Primitive Non-Motorized	8,155	29,921
Semi-Primitive Non-Motorized Wilderness	No designated wilderness	11,720
Primitive	No designated wilderness	2,813

* Forest Plan acres include the town of Tusayan as well as KNF land in the Urban ROS class.

Table 2. Forest Plan VQO Acres by District

Visual Quality Objective	Tusayan District	Williams District
Preservation	No designated wilderness	6,651*
Retention	150,171	20,989
Partial Retention	176,162	177,854
Modification/Maximum Modification	5,094	329,899

*Acres listed in KNFLMP for all of Kendrick Mountain Wilderness (Sycamore Wilderness acres not included as management prescriptions for it are found in the Coconino NFLMP.)

Alternative 2

The Proposed Action

Alternative 2, the proposed action, would adopt the new ROS and SMS mapping, standards as amendments to the Forest Plan, and the Kaibab NF ROS-SMS Guidebook as an adjunct to the Forest Plan. These actions would ensure the two management systems provide effective and coordinated direction, and adequate standards and guidelines to assist development of management activities to achieve desired conditions. This alternative provides exceptions that may be used to achieve critical projects, such as temporary lowering of SIO levels and extended treatment timelines. This flexibility is critical to meet the long-range goals of maintaining healthy, sustainable forests on the South Zone, while maintaining and improving recreation values and scenic integrity over time. Additional guidance for project implementation would be provided in the form of the Kaibab NF ROS-SMS Guidebook. The proposed monitoring plan is an integral part of implementing the proposed amendment. Monitoring will assist managers in tracking changes in specific ROS and scenic classes, and scenic integrity. The progress toward desired conditions will also be tracked as well as areas where alternate or additional measures should be implemented to achieve or sustain these conditions. Figures 4 and 5 display the proposed mapping Tables 3 and 4 display proposed acreages of ROS and Scenic Integrity Objectives (replacing Visual Quality Objectives) on the Tusayan and Williams Ranger Districts.

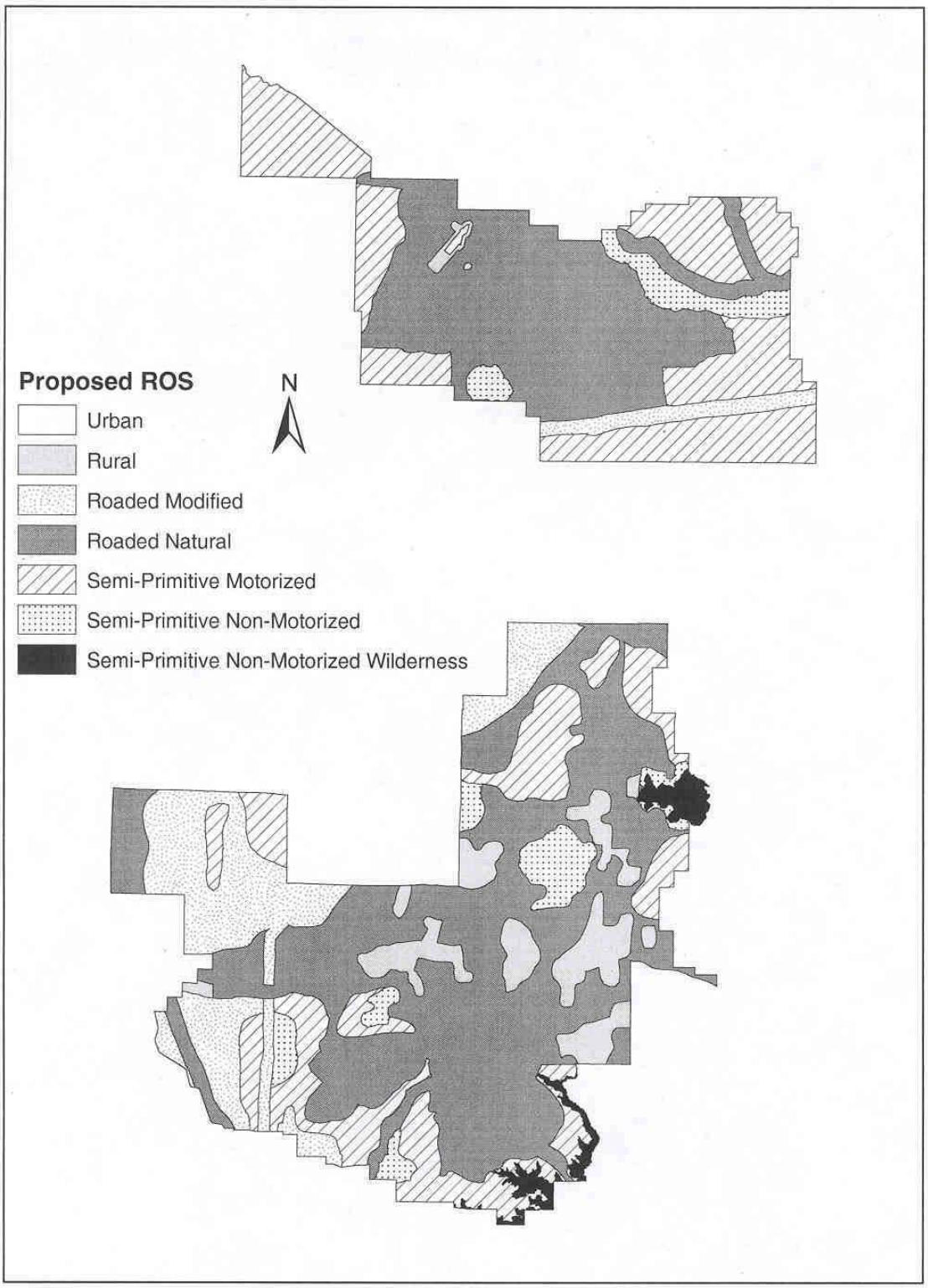

Figure 4. Proposed Action ROS Map

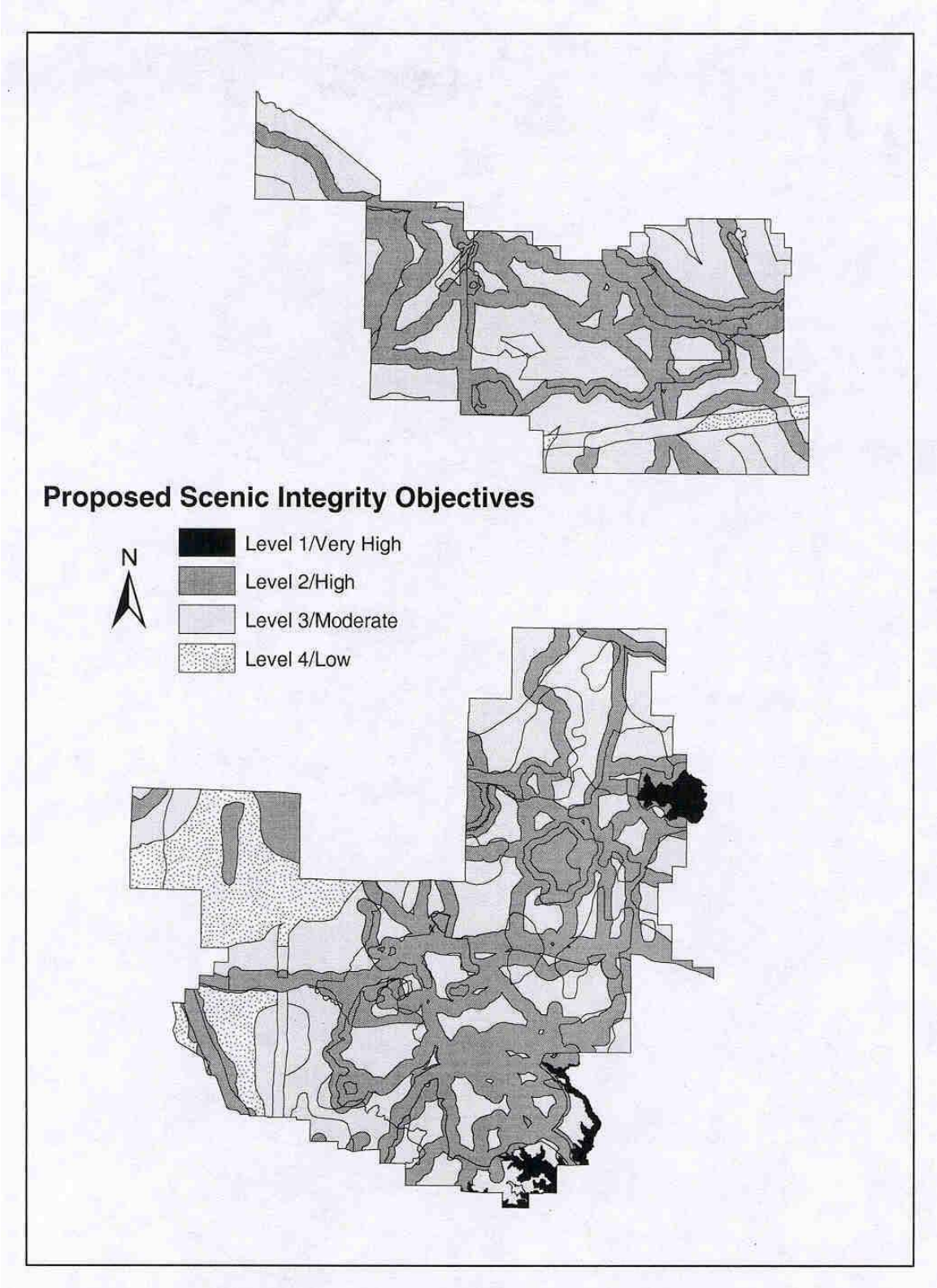

Figure 5. Proposed Action Scenic Integrity Map

Table 3. Proposed ROS Acres By District.

ROS Class	Tusayan District	Williams District
Urban	641*	0
Rural	2,149	50,759
Roaded Modified	13,052	98,152
Roaded Natural Appearing	Propose to use Roaded Modified, Roaded Natural and Rural	Propose to use Roaded Modified, Roaded Natural and Rural
Roaded Natural	159,308	289,802
Semi-Primitive Motorized	134,917	113,223
Semi-Primitive Non-Motorized	21,359	29,533
Semi-Primitive Non-Motorized Wilderness	No designated wilderness on Tusayan Ranger District	11,720
Primitive	No designated wilderness on Tusayan Ranger District	2,813

*The proposed action only includes the town of Tusayan and Grand Canyon Airport in Urban ROS.

Table 4. Proposed SIO Acres by District.

Scenic Integrity Objective	Tusayan District[1]	Williams District[2]
Very High (former "Preservation" Visual Quality Objective)	No designated wilderness	14,533
High (Retention)	26,507	268,017
Moderate (Partial Retention)	289,235	242,309
Low (Modification)	15,685	71,143
Very Low (Maximum -Modification)	0	0

1Acres are approximate, some variability occurs across GIS coverages.
2 Camp Navajo acreage was not mapped or included, as access is restricted, neither Forest Service regulations or authority govern its management. Both KNF portions of Kendrick Mountain and Sycamore Canyon Wilderness were included in the combined Preservation-Very High level. Some of the areas adjacent to the Wilderness are mapped Semi-Primitive Non-Motorized and Semi-Primitive Motorized.

Mitigation Measures Common to All Alternatives

No significant public comments were received on the proposal; therefore, there was no need to develop mitigation measures in response to public concerns.

Comparison of Alternatives

This section provides a summary of the effects of implementing each alternative. Information in the table is focused on activities and effects where different levels of effects or outputs can be distinguished quantitatively or qualitatively among alternatives.

Table 5. Comparison of Effects by Alternative.

Resource	Alternative 1 (No Action)		Alternative 2 (Proposed Action)	
Recreation Management	No direct effects. Indirect effects include a loss of quality/amount of Semi-Primitive ROS settings available over time and a continuing trend downward in Roaded Natural conditions, leading to the Forest providing less diverse recreation settings across the South Zone.		No direct effects expected. Exceptions facilitating forest restoration and fuels reduction treatments will result in short-term impacts to some ROS classes, but allows for long-term protection of forests and recovery of recreation settings over time. A slow recovery of Roaded Natural ROS setting conditions, and maintenance of mapped Semi-Primitive ROS class acres and conditions over time is expected. A broader spectrum of ROS settings would provide more diverse recreation settings across the South Zone.	
ROS Class	**Alternative 1 - Tusayan District Acres1**	**Alternative 1 - Williams District Acres**	**Alternative 2 - Tusayan District Acres2**	**Alternative 2 - Williams District Acres**
Urban	2335	0	641	0
Rural	0	0	2,149	50,759
Roaded Modified	Not used in Forest Plan	Not used in Forest Plan	13,052	98,152
Roaded Natural Appearing	126,887	552,140	Proposed to use *RN, RM, and R	Proposed to use *RN, RM, and R
Roaded Natural	Not used in Forest Plan	Not used in Forest Plan	159,308	289,802
Semi-Primitive Motorized	193,737	0	134,917	113,223
Semi-Primitive Non-Motorized	8,155	29,921	21,359	29,533
Semi-Primitive Non-Motorized Wilderness	No designated wilderness	11,720	No designated wilderness	11,720
Primitive	No designated wilderness	2,831	No designated wilderness	2,813

[1]Acres are based on GIS data, and some variation occurs between mapping layers. Forest Plan acres included the town of Tusayan as well as some surrounding KNF land in the Urban ROS class.
[2]The proposed action only includes the town of Tusayan and Grand Canyon Airport in Urban ROS. R = Rural, RM = Roaded Modified, RN = Roaded Natural.

Table 5. Comparison of Effects by Alternative

Resource	Alternative 1 (No Action)		Alternative 2 (Proposed Action)	
Scenery Management	No direct effects. Indirect effects of using existing designations allow low scenic quality and scenic integrity to exist on the South Zone, inadequate mapping doesn't allow accurate short term or long term monitoring. A trend in overall loss of scenic quality would continue and possibly accelerate on the South Zone.		No direct effects. Indirect effects include potential short-term negative effects due to use of exceptions for restoration and fuels reduction treatments since site disturbance will be visible for longer periods of time. A gradual long-term improvement of scenic quality and integrity is expected across the South Zone.	
Visual Quality Objective/Scenic Integrity Objective	**Alternative 1 - Tusayan District Acres[1]**	**Alternative 1 - Williams District Acres[1]**	**Alternative 2 - Tusayan District Acres**	**Alternative 2 - Williams District Acres[2]**
Preservation/ Very High	0	6,651	0	14,533
Retention/High	9,733	20,989	150,171	268,017
Partial Retention/ Moderate	66,039	177,854	176,162	242,309
Modification/ Low	269,486	329,899	5,094	71,143
Maximum Modification/ Very Low			0	0

[1]Acre totals are based on GIS data and some variation occurs between mapping layers. The Forest Plan combined Modification and Maximum Modification VQO. The KNF Management Plan provides management direction for Kendrick Mountain Wilderness (including the Coconino National Forest acres) and none of the KNF acres of Sycamore Canyon Wilderness (see Coconino NF Management Plan).
[2]Camp Navajo acreage was not mapped or included, as access is restricted. Both KNF portions of Kendrick Mountain and Sycamore Canyon Wilderness were included in the combined Prservation-Very High level. Some of the adjacent areas are mapped Semi-Primitive Non-Motorized and Semi-Primitive Motorized.

Table 5 Comparison of Effects by Alternative

Resource	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Vegetation Management	Few or no indirect or direct effects. The Forest Plan does not have complete direction on ROS/SIO, therefore mitigation measures are developed for vegetation management for each project.	An increase in areas mapped as visually sensitive could lead to higher cost migitations in some areas leading to reduced acres treated by each project. This alternative would not significantly alter the amount of thinning or tree clearing acres that could be accomplished. Could be some minor downward trends in cover type composition and forest health.
Fire and Fuels Management	Few or no indirect or direct effects. The Forest Plan does not have complete direction on ROS/SIO, therefore mitigation measures are developed for hazardous fuels treatments for each project.	Improved consistent ROS/SIO direction will allow for more efficient project planning; exception language adjustment of ROS/SIO standards that will facilitate hazardous fuels treatment accomplishment.
Range Management	Few or no indirect or direct effects. The Forest Plan does not have complete direction on ROS/SIO, therefore mitigation measures are developed case-by-case for each range improvement project.	Little or minor direct or indirect effects. More acres of higher visual sensitivity will require mitigations that will increase implementation costs leading to slightly fewer acres being treated by each project, but the range program will not be significantly affected.
Wildlife Management	No direct effects on, and no disturbance to, wildlife species expected. No affect on federally listed species or designated critical habitat. No effects on programmatic achievement of habitat improvement projects.	No direct effects on, and no disturbance to, wildlife species. Slight reduction in ability to accomplish some wildlife habitat improvement projects due to mitigations for increased visually sensitive acres. Slight decrease in ability to achieve wildlife habitat improvement projects.
Sensitive Plants	No noticeable negative effects, or beneficial effects, on sensitive place species expected.	Areas where recreation use could decrease could have neutral or slight beneficial effects on sensitive species. Areas where use could increase could have a negative effect on sensitive species habitat.
Heritage Resources	No direct or indirect effects to any heritage resources expected.	No direct effects on heritage resources. An indirect benefit to heritage resources is expected due to increased acres of Semi-Primitive Non-Motorized ROS class.
Lands and Minerals	No effects on lands or special uses management.	Increased mitigation measures required of SUP holders in visually

Resource	Alternative 1 (No Action)	Alternative 2 (Proposed Action)
Management	No effects on minerals management. Some quarries and mining claims continue to not meet FP ROS/VQOs. The number of quarries/claims out of compliance with FP direction may increase.	sensitive travelways and foregrounds. No negative effects on on-going minerals activities. New claims will be required to have additional mitigation measures in visually sensitive areas.
Noxious Weeds	Will not increase or decrease populations of noxious weeds.	Neutral or slightly beneficial effects in areas where human use and disturbance could decrease (ROS Semi-Primiive, Roaded Natural, SIO Levels 1, 2, 3). In areas where human use and disturbance could increase (Rural, Roaded Modified, SIO Level 4).

Chapter 3 - Environmental Consequences

This section summarizes the physical, biological, social and economic environments of the programmatic Forest Plan amendment and the potential changes to resource programs and environments due to implementation of the alternatives. It also presents the scientific and analytical basis for the comparison of alternatives presented in the chart above.

Recreation Management

The Recreation Opportunity Spectrum ROS provides a framework that allows forest managers to plan for and provide a variety of recreational environments. It allows managers to describe and provide a range of recreational opportunities from highly developed areas (Urban, Rural, Roaded Natural, Roaded Modified) to areas with little or no development (Semi-Primitive Motorized and Non-Motorized, Primitive). Attributes typically considered in describing the settings are size, scenic quality, type and degree of access, remoteness, level of development, social encounters, and the amount of on-site management. By providing and maintaining this spectrum of recreational settings and opportunities, a broad segment of the public can find quality recreational opportunities for a variety of recreational activities and experiences, now and in the future. Changes in a national forest's mix of ROS classes affect the recreational opportunities offered (USDA Forest Service, ROS Book 1986).

Affected Environment

The 1988 Forest Plan ROS mapping classified the Williams Ranger District into two classes outside of Wilderness: Roaded Natural (RN) and Semi-Primitive Non-Motorized (SPNM). The Kendrick Mountain Wilderness was classified as Semi-Primitive Non-Motorized (SPNM) and Primitive (P). ROS mapping of the Sycamore Canyon Wilderness was not documented in the Kaibab NF Forest Plan, which defers to the Coconino NF Forest Plan. The Tusayan Ranger District was classified Roaded Natural (RN) and Semi-Primitive Motorized (SPM) ROS classes.

Since 1988, inconsistencies between Forest Plan ROS and VQO direction allowed projects to be designed and implemented in ways that were inconsistent with assigned ROS classes, causing or contributing to a downward trend in RN and both SPM and SPNM setting conditions. It has been discovered that some areas of the South Zone were mapped incorrectly in 1988. One example is the Drake area, a highly modified mining district in a Roaded Modified (RM) ROS class condition. This area is incorrectly mapped in the Forest Plan as SPNM ROS class. Other changes beyond the control of the Forest have occurred, including road building, population growth and increased recreation use, and development of adjacent private lands. These changes have also caused or contributed to a downward trend in ROS class conditions. In 2003 and 2004, when ROS existing conditions were inventoried re-mapped as part of the South Zone Recreation Desired Future Condition (RDFC) project, it was documented that some of the RN areas have trended toward RM and Rural ROS conditions, and some SPM and SPNM areas have changed to RN and RM ROS classes. The net result of the landscape becoming more uniform-appearing, more roaded, and more managed, is a loss of a spectrum of available recreational settings and opportunities across the South Zone, particularly the SPM and SPNM ROS settings. Although very limited and becoming even more so, there are still areas that meet SPM and SPNM ROS class requirements outside of Wilderness on both Districts. Semi-Primitive conditions are nearly

impossible to restore without many decades of natural recovery or expensive restoration efforts. Once semi-primitive conditions are lost of seriously compromised, the loss of SPM and SPNM ROS areas is usually considered irreversible.

Recent survey results indicated recreation users (visitors and local residents) to the South Zone participate in a wide variety of recreational activities in a broad spectrum of recreational settings. Survey results also indicated that users have a preference for pursing recreational experiences and activities in more natural-appearing landscapes, consistent with Primitive (P), SPNM, SPM, and RN ROS class settings. The survey results demonstrated a growing gap between recreation visitors' demand for more natural-appearing ROS class settings and the trend toward more managed-appearing ROS class conditions.

In contrast to South Zone visitor's desires for natural-appearing landscapes, there is also a growing public demand for hazardous fuels reduction projects in the wildland-urban interface zones surrounding adjacent rural communities and private residences. The management actions necessary to protect adjacent properties will likely entail large-scale mechanical treatments in wildland-urban interface areas that could be highly visible over a long period of time. Similarly, large-scale restoration treatments to recreate more resilient, healthy, and sustainable forest conditions for current and future generations are being contemplated.

For more details on the Existing Condition and Desired Future Condition ROS mapping process, see the ROS Mapping records in the project record.

Environmental Consequences

Alternative 1 (No Action)

Alternative 1 would not amend the Forest Plan. The existing 1988 ROS mapping would continue to be used and existing Forest Plan direction for ROS settings would remain the same. Currently existing Forest Plan ROS standards and guidelines would remain in effect. The current Forest Plan monitoring plan, which does not include monitoring of ROS class conditions, would continue to be used.

Direct and Indirect Effects

Direct environmental effects to recreational resources are not expected under the No Action alternative. Indirect environmental, social, and economic effects would be expected to occur over time, as project-level decisions are proposed and implemented.

Forest Plan ROS mapping and related recreation standards and guidelines would continue to be used as direction for recreation project implementation, and for all other resource project planning and implementation across the South Zone. The existing Forest Plan ROS mapping has known errors, and existing standards and guidelines are lacking the detail. Existing Forest Plan VQO mapping is inconsistent with ROS mapping, particularly in the SPM and SPNM ROS classes and RN ROS. As a result, recreation managers would continue to find it difficult to develop consistent and effective input to project-level planning. Implementation of inconsistently designed project activities would negatively affect the ability to maintain consistent quality of Forest Plan ROS classes, and some areas will not be maintained to ROS standards. As ROS classes are not maintained consistently or adequately over time, it would become increasingly difficult to manage outdoor recreational opportunities or to make informed resource management decisions. It would also be difficult to provide to customers accurate information regarding available recreational settings and opportunities.

Specifically, it is expected that there would be a continuing erosion of conditions in some designated SPM and SPNM ROS areas as a result of on-going motorized uses and the implementation of incompatible resource management activities. It is expected that the scenic attractiveness of RN ROS settings would continue to decline as projects are implemented. There would be less distinction between ROS classes over time as areas become more motorized and more managed-appearing. Limited recreational setting options would constrain the South Zone's ability to provide diverse recreational opportunities to the increasingly diverse public.

Wilderness settings and opportunities would not be directly affected, as there would continue to be very few management activities proposed or undertaken within designated Wilderness. There is a continuing possibility that changes to adjacent areas currently in a semi-primitive condition could occur, which could negatively effect maintaining existing Wilderness ROS classes, decrease the amount of opportunities for solitude available within Wilderness, and negatively effect the quality of the wilderness experience for wilderness visitors.

Direction in the Forest Plan requires that the Forest revisit and revise ROS and VMS mapping. These revisions would not occur and the South Zone would not meet Forest Plan direction. If the South Zone were required to revise ROS or SMS in project-level analyses, project planning time and costs would be increased for each project if Forest Plan amendments were required. Proceeding project-by-project, it would take decades to implement corrections in the ROS and SMS maps and direction across the South Zone.

Cumulative Effects

Due to past, present, and foreseeable future activities it is expected there would be less distinction between ROS classes over time as areas become more motorized and more managed-appearing. Trends toward increased RM and Rural ROS class setting acres, a reduction in acres and quality in RN ROS settings, and a loss of mapped SPM and SPNM ROS acres outside of designated Wilderness would continue. Small areas of semi-primitive recreational opportunities would still exist in inaccessible canyons and steep mountain slopes, however, they may not be the areas designated by the Forest Plan which ultimately may not meet the national minimum size requirement (2500 acres). The cumulative effects of implementing Alternative 1 would be to contribute to the current downward trend in recreation setting quality brought about by the current Forest Plan mapping, standards and guidelines.

Alternative 2 (Proposed Action)

The proposed action would amend the Forest Plan to adopt revised and updated ROS, and new SMS mapping, standards, and guidelines. It would also adopt the Kaibab NF ROS-SMS Guidebook as an adjunct to the Forest Plan. The new ROS mapping and direction would be implemented on the South Zone per management direction and would meet Forest Plan direction. The ROS and SMS maps and direction were developed in conjunction so that previous conflicts between the two systems are resolved. Exceptions to standard Forest Plan ROS and SMS direction were developed in response to current Forest Service emphasis on restoring healthy forests and completing hazardous fuels reduction projects in the wildland-urban interface. Monitoring of ROS class conditions will be added to the Forest Plan.

Direct and Indirect Effects

Due to the programmatic nature of the Proposed Action, few direct environmental effects to recreational resources are expected under this alternative. Indirect effects are expected to occur over time, as project-level decisions are implemented.

New ROS mapping, Forest Plan standards, and an adjunct Guidebook would be used when planning and implementing projects across the South Zone. Consistent direction and complete mapping would aid the recreation specialist in providing resource specialist input to planning projects. Other resource managers and specialists would likewise have more complete information and consistent direction to use. The new mapping identifies a broader spectrum of ROS classes on both Districts.

Since implementation of the programmatic direction will occur only as project-level decisions are implemented on the ground, immediate changes in ROS class conditions affecting the mix of existing recreational opportunities and settings are not expected. Minor adjustments in some ongoing recreation operations and maintenance of dispersed and developed sites, which could have some small beneficial effects on achieving ROS class, desired conditions.

More consistency in project implementation would benefit the maintenance of ROS classes. Those areas already in the mapped ROS class condition will be maintained; where current conditions are not consistent with the desired target ROS a slow trend toward recovering or achieving mapped ROS class conditions is expected. Some SPNM ROS areas already have closure orders prohibiting motorized use. Areas not already closed to motorized use by a closure order (Sitgreaves Mountain, Bear Canyon, portions of the Coconino Rim, for example) would require further analysis and possibly restrictions or closures to manage use and maintain non-motorized conditions over time. Until that time special use permit proposals with motorized use would be discouraged or redirected to other areas, resulting in a very slight decrease in overall motorized use in these areas.

Employing SIO timeline exceptions for critical fuels reduction and ecosystem restoration projects would create conditions potentially inconsistent with desired ROS for a longer period of time than in the past. This would be most pronounced in RN and Rural ROS settings, and possibly in the SPM and SPNM settings, as evidence of management activities would be evident and visible for more than the previously prescribed one to two year timeframes. Timeline exceptions would likely be made to allow up to five years for project implementation, and up to 10 years for full recovery of implementation effects. The desired ROS class conditions should be largely recovered and achieved by 10 years.

Exceptions to treat up to 25% of SPM and SPNM ROS class areas at one time would result in the temporary loss of semi-primitive opportunities and experiences in the treatment areas, until the area sufficiently recovers. Some of the area would be maintained and available for semi-primitive experiences and opportunities. Once treatments are completed and areas recovered, desired SPM and SPNM ROS conditions would be achieved. Grassland restoration treatments would minimally meet SPM and SPNM ROS setting requirements, due to minimal treatment of middle ground and background slash. SPM and SPNM ROS areas located in the other vegetation types would generally be maintained at a somewhat higher quality, so a spectrum of semi-primitive conditions and settings would be maintained across the South Zone.

No direct effects to Wilderness are expected as a result of implementing this alternative. Indirectly, maintaining areas adjacent to the Wilderness boundary would provide for improved management and maintenance of desired Wilderness ROS settings and experiences.

Cumulative Effects

Under the Proposed Action alternative, as a result of past, present, and foreseeable future activities the increasing trends toward the more modified and accessible ROS classes, the loss of acres and quality of the RN ROS class, and the loss of acres and quality of the SPM and SPNM ROS settings are expected to level off. Over time, as large-scale treatments are completed and management shifts to maintenance activities, the shifts in ROS classes and quality of settings are expected to gradually stabilize and improve. The cumulative effects of Alternative 2 would be to reduce the current rate of decline in recreation setting quality, and in the long term, begin to reverse the declining trend.

Scenery Management

Affected Environment

The KNF is currently managing the scenic resource under an incomplete Visual Management System (VMS) inventory and mapping, with inadequate standards and guidelines. In 1988 when the Forest Plan was completed, Visual Quality mapping had not been completed, and forest managers assigned Visual Quality Objectives (VQO) to areas of known visual concern (major travel ways, high use Forest Roads, scenic areas, and recreation sites). The remainder of the forest was not mapped, and was assigned Modification-Maximum Modification VQO. Some of the Forest Plan standards did not relate to the mapping and were vague, others, which gave direction, have never been completed (such as updating and mapping VQO). In the 1996 Forest Plan amendment, management prescriptions for other resources had the affect of improving visual quality in EMA 2, 10 and 13. More specifically, these prescriptions called for unevenaged management, with scattered groups of trees, and retention of large, old growth trees. These are all characteristics that are desirable and contribute to high scenic quality for the KNF. Some of the visual management standards were removed in EMA 2, 10 and 13 with the assumption that the prescriptions for vegetation management would positively affect visuals, but none of the affects that are associated with the 1996 amendment have been formally recognized for visuals in the Forest Plan. The result is that there are still inadequate Visuals standards in place, as well as conflicts with recreation management standards. There is no correlation between the Recreation Opportunity Spectrum (ROS) and SMS, and the inherent conflicts between the two systems would continue to exist.

In 1995, the Scenery Management System (SMS) handbook replaced VMS handbook, and Forests were directed to update and revise mapping and standards to reflect the change.

Environmental Consequences

Alternative 1 (No Action)

Alternative 1 would continue the current Forest Plan direction for Visual Quality Management. Visual Quality Objectives are assigned to some land areas on the South Zone. This is contrary to Forest Service handbook direction (which is to convert to Scenery Management), and does not fulfill the Forest Plan direction to update and map the entire forest VQO. Inventory and Visual Quality mapping was not completed at the time of the Forest Plan implementation. No amendment would be made to the Forest Plan under this alternative.

Direct and Indirect Effects

Direct and indirect of implementing Alternative 1 include lack of adequate standards and comprehensive VQO mapping that hampers the effectiveness of specialist input to management

proposals. There would be no consistency in mitigation measures from one project to another. Areas of visual concern that are not currently designated with Retention or Partial Retention VQO would have little or no chance of having scenic quality maintained or improved. On Tusayan District only 22 percent of the land area, and 34 percent of Williams District land area, is mapped in retention or partial retention VQO, the remainder is Modificaiton / Maximum Modification which inherently allows low visual quality. Conflicts between visual management and the recreation opportunity spectrum settings would continue, as there would be no correlation between the two recreation management systems. The timelines for project requirement as listed in the VMS Handbook would continue to go unmet for large scale projects, and would be out of compliance with the Forest Plan.

Cumulative Effects

The 1988 Forest Plan decision to assign VQO to limited land areas (rather than using comprehensive inventory and mapping) has had the long-term effect of lowering visual quality. In the almost 16 years of Forest Plan direction, there have been almost no restrictions on management activities, and visual quality was discounted for the most part in favor of other resource objectives. Since the 1995 amendment, there have been some improvements in visual quality after project completion, but these have been small since inadequate standards and guidelines are still in effect. With the current and near future emphasis on forest health and fuel hazard reduction, the trend toward lowering scenic quality would continue and possibly be accelerated. Cumulative effects of implementing Alternative 1 would contribute to the current

Alternative 2 (Proposed Action)

The proposed action would amend the Forest Plan to adopt the new, comprehensive SMS mapping and standards for the South Zone. It would also adopt the Kaibab NF Recreation Opportunity Spectrum-Scenery Management System Guidebook (ROS-SMS Guidebook) as an adjunct to the Forest Plan. The SMS would be implemented on the South Zone per handbook direction and would meet Forest Plan direction. Correlation between ROS and SMS mapping has occurred so that the inherent conflicts between the two systems are resolved, and the systems support each other.

Direct and Indirect Effects

There would be few direct effects of the programmatic decision. Indirect effects would include improving the scenery management specialist's ability to give meaningful input to proposed management activities. The Forest Plan standards and Guidebook would give detailed information about project implementation and mitigation measures should be more predictable and evenly implemented across the South Zone. Since the desired condition is defined, progress toward that end can be monitored. Resource managers would have a clear expectation for maintaining and improving scenic quality and scenic integrity as much of the land area would be mapped in the higher SIO's.

Potential negative effects such as extensive acres of logging disturbance and treated and untreated slash would result from use of the exceptions (temporary lowering of SIO and extending timelines during project implementation) for large scale fuels and vegetation treatments. This would mean that short term site disturbance will be visible for longer periods of time. It is expected that at five years, the project would be in full implementation with maximum negative effects from slash and site disturbance, in ten years, implementation would be mostly completed, and the original Scenic Integrity Objectives would be met. In twenty years, there should be progress toward the desired condition, and scenic quality and scenic integrity would slowly

improve. The recent national emphasis on fuels reduction may mean that large areas of disturbance could be present simultaneously across the South Zone.

There would be continued long-term negative effects associated with minerals operations, communication sites and utilities, and some grassland restoration projects. Little or no progress is expected in improving scenic quality or scenic integrity for current minerals operations. These are long-term projects, and are expected to continue into the future. There would be little or no improvement in scenic quality or scenic integrity for current communication sites or utility corridors. These are also long-term special use permits, and until technology changes, there is still a need for land-based towers and supporting infrastructure. Grassland restoration projects would allow for SIO to be met along travel corridors, but would not mitigate the effects of whole dead trees in middleground and background areas. In some locations these effects would be minimal, in others the effects would be large and noticeable as many acres are treated each year. It is not anticipated that burning of the dead remnant trees in these areas would occur, so the effects would be long lasting, with evidence of treatment beyond 20 years.

Cumulative Effects

Past inadequacies in scenery management mapping, standards, and guidelines have had the effect of lowering scenic quality over time. The proposed action would amend the Forest Plan to adopt comprehensive mapping, standards and the ROS-SMS Guidebook, these would have the positive effect of placing about 90 percent of the South Zone land area into High and Moderate SIO's. Even with exception language that allows short term lowering of SIO and extension of timelines for large-scale projects, there would be a benefit to forest scenery management and scenic quality in the long term.

The existing negative trend for scenic quality would be lessened and slowly reversed in some areas (especially EMA 2 and 10) with the Proposed Action. There would still be short-term declines in scenic quality from the effects of forest health and fuels management projects, but in the long term, progress would be made toward pre-settlement forest conditions and this would be an upward trend. As the forest moves closer to the desired condition, the scenic integrity (or intactness of the landscape) would slowly improve. Recreation settings would also begin to have distinct characteristics with the appropriate SIO assigned. The exisiting negative trend would continue in areas where minerals operations, communications sites and utilities, and mechanical shearing treatments are currently found, as these are expected to continue or expand in the future. The new mapping would assist the forest in choosing locations where these activities might best occur, but the physical changes in the landscape would still be visible and would lower the scenic quality of these areas, and overall scenic integrity of some areas of the South Zone. The cumulative effects of Alternative 2 would be to reduce the current rate of decline in the scenic quality in the short term, and in the long term reverse the declining trend in the majority of the South Zone.

Vegetation Management

Affected Environment

The Williams and Tusayan Ranger Districts are made up of a variety of forest types. The majority of the districts are forested with ponderosa pine, pinyon juniper woodlands, and juniper woodlands. Mixed conifer sites are found on higher elevations and northern/eastern canyon exposures. Open savannah/meadows are mixed in with forested sites. Scattered areas of aspen can also be found on mountains and other areas.

Most forested sites have much higher stocking than existed prior to Euro-American settlement of the area. These high tree densities lead to a variety of problems including poor forest health, high risk of catastrophic wildfires, and low forest diversity.

The districts have a tree thinning program to reduce the density of trees and alleviate some of the problems created by high tree densities. Precommercial and commercial thinning, commercial fuelwood, personal use fuelwood, are all methods used to reduce tree density. Thinning treatments are combined with activity slash treatments such as prescribed burning and piling in order to reduce overall fire risk.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

The current Forest Plan does not give sufficient guidance as to what management should be used in different recreational opportunity spectrums (ROS) or scenic integrity objectives (SIO). Under the current plan guidelines, mitigation measures are generally developed on a project-by-project basis. Inconsistent ROS and VMS Forest Plan direction would likely contribute to delays in planning projects due to the time needed to develop project-specific mitigations. Occasional special cases arise that would be difficult to address with current ROS and VMS standards.

There are few or no direct or indirect effects of the no-action alternative.

Cumulative Effects

No cumulative effects are expected from this alternative.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The proposed new ROS-SMS mapping and Guidebook (alternative 2) are somewhat more restrictive than the mapping and standards found in the no-action alternative. The Guidebook has many specific recommendations and the mapping places more acres in different ROS and SIO settings than are currently found in the Forest Plan. The Guidebook also recommends more areas where certain treatments would be avoided. There may be a change in the number of acres where personal use and commercial fuelwood could be used to reduce tree density (such as in semi-primitive non-motorized areas) and this would reduce flexibility in the tools available to achieve tree density reduction. Other proposed guidelines such as requiring stump heights to be less than 6” in height in many areas, 100’ slash pullback along sensitive travel corridors in some areas, and increased levels of slash treatment in certain areas may also contribute to a decrease in acres treated. The Guidebook recommendations may also lead to more areas on the forest moving away from cover types of aspen and ponderosa pine and moving towards mixed conifer. Some of the new, more restrictive ROS settings (semi-primitive) are found around the districts’ higher mountains where most of the change in cover type to mixed conifer could occur.

The flexibility in the proposed standards with the exceptions language for forest health treatments should create more uniform mitigation measures across the districts.

The proposed alternative does not significantly alter the amount of thinning or tree clearing that can be done across the districts. Higher costs of vegetative treatments in these areas could cause fewer acres to be treated.

Cumulative Effects

Because the proposed action is somewhat more restrictive than current Forest Plan, there could be some minor downward trends in species composition as a result of increases in shade tolerant species and forest health as a result of adopting Alternative 2.

Fire and Fuels Management

Affected Environment

The South Zone is comprised of all fuel types (grass, brush, timber litter and slash) across several cover types. The proposed action primarily affects Ecosystem Management Areas (EMA) 2 and 10 (coniferous forest and some coniferous woodland). Other EMAs may be affected; however, most treatments/projects tend to occur in EMAs 2 and 10.) Elevation ranges from 6500' to 9388' in EMA 2 and 6700' to 6900' in EMA 10. EMA 2 and 10 represent 308,394 and 86,250 acres respectively. The fuel profile is conducive to high intensity wildfires that can result in destruction or heavy damage to resources and developed facilities (KNF Forest Plan). Current forest conditions are not consistent with their historical conditions and are not sustainable (Covington et.al. 1994). In order to be sustainable, these areas are in need of prompt and effective fuels treatment. Failure to do so would result in significant damage and/or loss of outdoor recreation opportunities; wilderness opportunities; wildlife and fish habitat; forage and grazing; timber; and soil, water and air quality over time.

The South Zone currently treats about 5,000 to 7,000 acres/year of Hazardous Fuels (HF). The fuels program also burns between 500 and 1500 acres/year of projects funded by other than HF reduction (e.g. range burns, wildlife habitat improvement, research projects, etc.) Effective fuels management depends on timely planning, implementation and monitoring of various projects. The greatest departure from this generally arises from large time investments in NEPA planning and the signing of NEPA decisions that do not account for immediate underburn treatment.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

The no-action alternative has effects on the timeliness of fuels reduction activities and the ability to reduce fire risk.

Inconsistent ROS and VMS Forest Plan direction would likely contribute in delays in planning projects due to the time needed to develop project-specific mitigations. Occasional special cases arise that would be difficult to address with current ROS and VQO standards. For example, safety zones may be "minimal" in sensitive areas. This has potential to decrease safety as ROS-VQO mitigations could be counter to standard safety mitigation methods. In addition, VQOs have been cited to require actions that commit resources to areas that would otherwise be committed to higher fire risk priorities. Similarly, VQO requirements prevent or limit increases in crown base height (live tree crowns/ladder fuels do not get removed). By failing to adequately alter the fuel profile, it would be more likely that inevitable future fires would be more damaging and difficult to control. Similarly, mitigating VQO concerns in the past has resulted in NEPA decisions to thin to light and ineffective levels in the urban interface. Also, short term impact mitigation may lead to more expensive and time consuming slash treatment methods that could cut production in half. These methods (dragging slash up to 100' before piling) increases the risk

of injury due to increased exposure to carrying weight on rocky ground. Additional funds spent on less effective or more expensive treatments preclude other areas from receiving treatment.

The no action alternative would generally contribute to a continuation of project delays as a result of project planning, to deferring high priority fuels treatment areas, to less effective treatment (generally adjacent to forest roads), to less forest area treated, decreases in firefighter safety, and to construction of control lines that are not otherwise needed. The short term air quality; however, would be better with less thinning and burning activities. However, long term smoke impacts could be greater due to increased wildfire growth potential over time.

Cumulative Effects

The no action alternative would result in a net decrease in our ability to reduce fire risk due to a less productive fuels treatment program. Cumulative effects for program actions are negligible for this proposal.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

The effects of the proposed action on the fuels program would generally be positive with reduced planning delays and increases in thinning and burning. The programmatic effects of the proposed action on fuel hazard levels, air quality and fire risk are similar across the ROS classes. Under all classes, the ability to reduce fuel hazard levels and fire risk should increase as immediate scenic integrity requirements have been altered to facilitate treatment. More accurately, SIO objectives have not changed under the proposed action but meeting SIO's within 1-2 years would generally be temporarily deferred until project completion. This should greatly reduce delays described under the no action alternative.

Timelines for hazardous fuels reduction projects may be shortened considerably under the proposed action as exception language developed in the Guidebook may be used. The timeliness of completing fuels treatments would be improved in RN, RM and Rural ROS areas as the related SIO time constraints are less limiting due to exception language provided in the Guidebook. However, in SPM and SPNM areas have potential to continue to delay treatments as the timelines and treatment area sizes must be worked out per project. An effect of shortened timelines would be that long term SIO's would be met sooner. Net fire risk would be reduced over time due to decreased delays and increased fuels treatment activities. Short term smoke impacts would be increased due to greater thinning and burning activities. However, state standards for air quality would still be met.

Cumulative Effects

Under the Proposed Action, the cumulative effects are similar to the direct effects, but they are intensified. Our ability to decrease hazardous fuel levels and fire risk would be improved to a greater extend because delays would not be compounded by time loss from administrative processes. There would be negligible cumulative effects for this proposal.

Range Management

Affected Environment

There are 31 grazing allotments on the South Zone. About 75 percent of the areas are classified as full-capacity acres (those that can sustain moderate livestock grazing pressure), and 25 percent are not-suitable to livestock grazing due to steepness of terrain or lack of forage.

Rangeland improvement projects are directed toward improving grazing for all ungulates. These include construction of new watering points and new fences to aid in proper utilization and distribution by livestock. Mechanical treatment of tree and shrub encroachment into grasslands is also planned and implemented in an on-going program of work, with about 2000 acres treated per year.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

Forest Plan direction for ROS and VQM input into livestock grazing projects is minimal, and mitigations are usually developed on a project-by-project basis to keep impacts to a minimum. In areas planned to receive grassland maintenance, areas with high recreational values or that are visually sensitive have mitigations developed for each project. No change is expected in this program with this alternative.

Cumulative Effects

The no-action alternative would have little or no cumulative effects on the range management program.

Alternative 2 (Proposed Aciton)

Direct and Indirect Effects

The proposed action would have little or minor effects to project work. Mitigations would continue to be developed. There may be slightly more mitigations required for visually sensitive areas or ROS classes that have visually sensitive foregrounds that could increase planning and implementation costs.

Cumulative Effects

Possible cumulative effects of this alternative would be an increase in costs that would lead to slightly fewer acres being treated over time but would not cause the range program to provide inadequate management.

Wildlife Management

Affected Environment

Key federally listed, Forest Service sensitive, management indicator, migratory bird, and local species that may be affected by the alternatives include those at focus for wildlife habitat improvement projects (Table 6).

Table 6. Focal Species for Wildlife Habitat Improvement Projects.

Habitat Improvement Project	Focal Species
Aquatic habitat fence exclosure	Northern leopard frog, Cinnamon teal, Wilson's phalarope
Artificial water catchment repairs	Pronghorn antelope, Rocky Mountain elk, mule deer, turkey, northern goshawk

Spring enhancement or protection	Pronghorn antelope, Rocky Mountain elk, mule deer, turkey
Aspen enhancement	Red-naped sapsucker, Williamson's sapsucker, Rocky Mountain elk, mule deer
Browse enhancement	Rocky Mountain elk, mule deer
Grassland or meadow enhancement or protection	Pronghorn antelope, Rocky Mountain elk, mule deer, turkey, Chihuahua savannah sparrow, Navajo Mexican vole, ferruginous hawk, golden eagle, northern harrier, prairie falcon, Swainson's hawk, northern goshawk
Fuel reduction to protect key habitat	Mexican spotted owl
Fence modifications	Pronghorn antelope, Rocky Mountain elk, mule deer

Aquatic habitat on the zone is limited to artificial reservoirs and ephemeral lakes, stock tanks, ephemeral drainages, and a few natural springs. Recent drought conditions have resulted in reduced quantity and quality of aquatic habitat for the northern leopard frog, cinnamon teal, and Wilson's phalarope and increased importance of existing water sources and springs for the pronghorn antelope, Rocky Mountain elk, mule deer, turkey, and northern goshawk and its prey. Northern goshawks are often seen hunting at tanks or other water sources.

Aspen has decreased across the zone since pre-Euroamerican settlement (estimates across northern Arizona = 96% succeeded to conifers, Bartos 2001). Much of the existing aspen forest on the zone has become decadent and/or encroached by conifers. Therefore, aspen habitat used by the red-naped sapsucker, Williamson's sapsucker, Rocky Mountain elk, and mule deer has decreased in quantity and quality across the zone.

Browse availability, primarily cliffrose, has slowly been encroached by pinyon pine/ juniper and is being lost as a primary browse plant for elk and mule deer. Browse for wildlife has been improved recently through treatments that have removed encroaching trees from around browse. Therefore, browse habitat quantity and quality that has been reduced over the long term, has more recently been increasing.

Grasslands and meadows have been encroached by ponderosa pine, pinyon pine, and juniper trees during the past century. Recent grassland and meadow habitat improvement projects have aimed at reducing this encroachment by hydraulic sheering, chainsaw and hand-tool tree removal, and prescribed burning. Restoration has also involved fencing out livestock in some meadows and grasslands. Therefore, grassland and meadow habitat quantity and quality has been reduced over the long term, but more recently has been increasing. Grasslands or meadows are important for foraging and/or breeding of the pronghorn antelope, Rocky mountain elk, mule deer, turkey, Chihuahua savannah sparrow, Navajo Mexican vole, ferruginous hawk, golden eagle, northern harrier, prairie falcon, Swainson's hawk, and northern goshawk.

The Mexican spotted owl (MSO) Recovery Plan (December 1995) identified the risk of catastrophic, stand-replacing fire as a serious threat to MSO habitat due to the uncharacteristically dense forest conditions in these, and surrounding, areas. This threat is countered by the preference of MSO for habitat with dense canopy cover, multiple vegetative layers, and dense amounts of down-woody debris, which increase fire risk. MSO habitat is found primarily in the mountains and canyons located on the South Zone and such habitat in the Kendrick Mountain Wilderness was partially destroyed by a wildfire. Therefore, MSO habitat quality and quantity has been reduced on the zone from catastrophic fire. The MSO Recovery Plan encourages habitat improvement projects that aim at reducing fire risk to MSO protected activity centers. Though at

this point in time no such projects have been implemented or planned, there may be potential for future work in a few areas on the zone, including on Bill Williams and Sitgreaves mountains and to the southwest of these mountains.

Net-wire fences and railroad rights-of-way fences are effective barriers to pronghorn movement (Ockenfels et al. 1994). In addition, barbed-wire livestock fences can impede movement, or injure or kill pronghorn if they are not constructed properly. Pronghorn typically pass under fences, and therefore a minimum lower strand height of 16-18 inches is necessary (Ockenfels et al. 1994), as well as a smooth bottom wire to reduce the potential for snagging and injury. In total, there are approximately 1,700 miles of fences within the zone. There is some non-Forest Service net-wire fences along railroad tracks, some private lands, and Interstate 40, which are effective barriers to pronghorn movement in these areas. Some interior Forest Service fences on the zone have four strands with the bottom wire barbed, while others have smooth bottom wires. Past projects have aimed at improving pronghorn movement by modifying fences. Modifications included inserting sleeves of pvc piping on the bottom barbed wires and raising the height of the bottom wire to 18-20 inches at locations where pronghorn passage is evident. Informal monitoring has shown that pronghorn are still using the modified crossings. In summary, pronghorn seasonal and daily movement abilities were decreased through the past century with the construction of fences, but recent trends have been to minimize the impacts of fence impediments by using design features or modifications that promote passage. Pronghorn movement is not possible between across Interstate 40 and it is limited across other larger highways (e.g., Highway 64 and 89). Otherwise within the zone, pronghorn movement capabilities are fair, with fences impeding some movement, and design and modifications minimizing such impediments in some locations.

Fences can also impede elk and mule deer movement and cause injury or death. Recent trends have been to minimize the impacts of fences by using design features or modifications that promote passage. Elk and deer usually jump over fences and therefore, pvc pipe has been placed on the top wire in areas where evidence of elk and/or mule deer movement is identified to reduce the potential for snagging and injury.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

Because there are no standards or guidelines in the No Action alternative that would preclude minimizing and/or mitigating wildlife concerns at project levels, these actions would have no direct effects on, and would cause no disturbance to, wildlife species. In addition, federally listed species concerns supercede the proposed and current standards and guidelines, and therefore, the No Action alternative would not affect federally listed species.

The No Action Alternative would have no programmatic effects.

No changes are expected as a result of the No action Alternative in aquatic habitat trends, or population trends of species that utilize aquatic habitats, in aspen habitat trends, or population trends of species that utilize aspen habitats, in browse habitat trends, or population trends of the Rocky Mountain elk and mule deer that utilize browse habitats, in grassland-meadow habitat trends, or population trends of species that utilize grassland-meadow habitats, in MSO habitat or population trends, or in fence modifications for habitat or population trends affected by these.

Cumulative Effects

Cumulative effects include past, present, and reasonably foreseeable future activities that are likely to occur. The geographical extent of analysis includes the Sycamore Canyon, Upper Verde River, Cataract, Spring Valley, Upper Partridge Creek, Cedar-Deadman, Miller Wash, Upper Cedar Wash, Lower Cedar Wash, Lee Canyon-Lower Little Colorado River, Redhorse Wash, and Heather Wash watersheds. This analysis area incorporates a landscape scale (i.e., all watersheds encompassing the zone) as well as the home ranges of all of the far-ranging ungulates and birds analyzed and those of shorter-ranging species during their use of the zone.

Actions that have affected the programmatic achievement of wildlife habitat improvement projects include development of the Kaibab National Forest Land Management Plan (Forest Plan) in 1988, amendment of the Forest Plan in 1996, and future revision of the Forest Plan anticipated to start in 2006. Because some wildlife habitat improvement projects were recommended in the Forest Plan, the above actions increase the programmatic achievement of such projects, through increased funding and direction to meet these Forest Plan recommendations. However, these actions have also incorporated many standards and guidelines that restrict the amount of area that programmatically can be treated because of the need for mitigation and minimization measures. Examples of measures that limit the amount of programmatic treatment area include Mexican spotted owl species and microhabitat surveys, northern goshawk surveys, heritage resource surveys, visual and recreation restrictions, noxious weed restrictions, and range management restrictions. As a result, the current trend in programmatic achievement of wildlife habitat improvement projects has been balanced between increased funding and direction and more restrictive guidelines.

The No Action Alternative would have no effects on the current balanced trend in programmatic achievement of wildlife habitat improvement projects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Because there are no standards or guidelines in the Proposed Action alternative that would preclude minimizing and/or mitigating wildlife concerns at project levels, these actions would have no direct effects on, and would cause no disturbance to, wildlife species. In addition, federally listed species concerns supercede the proposed and current standards and guidelines, and therefore, the Proposed Action alternatives would not affect federally listed species.

The Proposed Action may reduce the programmatic amount of area that can be treated with wildlife habitat improvement projects across the zone. Similar visual and recreation mitigation and minimization measures would be proposed for wildlife habitat improvement projects under both alternatives. The number of project areas to which these measures apply would be slightly greater under the Proposed Action Alternative because of the presence of more visually sensitive areas under this alternative, compared to the No Action Alternative. Some of these measures are consistent with wildlife habitat requirements and would not affect habitat improvement projects. In addition, wildlife habitat improvement within some visually sensitive areas can be avoided, so that the amount of area treated may not be affected. As a result, slight programmatic reduction in the area treated by wildlife habitat improvement projects may occur under the Proposed Action.

Any effects of the slight programmatic reduction in aquatic areas treated under the Proposed Action could be long-term, slight reductions in habitat quality and quantity for the northern leopard frog, cinnamon teal, and Wilson’s phalarope, and long-term, slight reductions in quality

and availability of important water sources for the pronghorn antelope, Rocky mountain elk, mule deer, turkey, and northern goshawk or their prey. These potential slight effects to habitat trends may be tied to long-term slight reductions in populations of these species from the Proposed Action. However, because the Arizona Game and Fish Department (AGFD) manages populations of the pronghorn antelope, Rocky Mountain elk, mule deer, and turkey, population effects to these species would be less apparent. In addition, any population effects to the northern goshawk are likely to be diminished because this species hunts in a variety of other habitats in addition to nearby tanks and water sources.

The potential effects of the possible slight programmatic reduction in aspen areas treated under the Proposed Action could be long-term, slight reductions in habitat quality and quantity for the red-naped sapsucker, Williamson's sapsucker, Rocky Mountain elk, and mule deer. Slight reductions in populations of red-naped and Williamson's sapsuckers could occur over time. There would be no population effects from the Proposed Action to the Rocky Mountain elk and mule deer because these species forage in a variety of other habitats and their populations are managed by the AGFD.

The potential effects of the possible slight programmatic reduction in browse enhancement areas treated under the Proposed Action could be long-term, slight reductions in winter food and browse habitat quality and quantity for the Rocky Mountain elk and mule deer. These slight effects to habitat trends may be tied to long-term slight reductions in populations of these species from the Proposed Action. However, because the AGFD manages populations of the Rocky Mountain elk and mule deer, population effects to these two species would be less apparent

The potential effects of the possible slight programmatic reduction in grassland and meadow enhancement areas treated under the Proposed Action could be long-term, slight reductions in foraging or breeding habitat quality and quantity for the pronghorn antelope, Rocky mountain elk, mule deer, turkey, Chihuahua savannah sparrow, Navajo Mexican vole, ferruginous hawk, golden eagle, northern harrier, prairie falcon, Swainson's hawk, and northern goshawk. These potential slight effects to habitat trends may be tied to long-term slight reductions in populations of the pronghorn antelope, Rocky mountain elk, Navajo Mexican vole, ferruginous hawk, golden eagle, northern harrier, prairie falcon, and Swainson's hawk from the Proposed Action. Because the AGFD manages populations of the Rocky Mountain elk, mule deer, and turkey, population effects to these species would be less apparent. Furthermore, grasslands and meadows are less important than some other habitats used by the mule deer, turkey, and northern goshawk, so population trends of these species are not likely to be affected. In addition, because the Chihuahua savannah sparrow only occurs on the zone during the winter and owing to the small scale of effects, populations of this species are not likely to be affected by the Proposed Action. The pronghorn antelope, which is the focal species for most grassland enhancement projects, could be slightly negatively affected by the potential slight, long-term reductions in treatment area. The potential slight reductions in treatment area for the pronghorn antelope could result in a slightly increased vulnerability to predators and a slightly decreased availability of forbs and other forage under the Proposed Action over time. Because the AGFD manages pronghorn antelope populations, such effects may be diminished by hunt-limit changes.

The current Zone Wildlife Program does not have any fuel reduction projects proposed to protect key habitat for the MSO, so the effects of the potential slight programmatic reduction in treatment area under the Proposed Action may only affect potential future projects of this type. The future potential treatment area on Sitgreaves Mountain and southwest of this mountain would have very few additional areas with recreation and visual restrictions under the Proposed Action Alternative, compared to the No Action Alternative; most of these areas could have similar restrictions under both alternatives. The future potential treatment areas on Bill Williams Mountain and southwest of this mountain could have more restrictive measures applied under the Proposed Action than are

currently applied under the No Action alternative. Therefore, the approximate slight potential programmatic decrease in fuels reduction treatments to prevent catastrophic fire in MSO habitat may occur primarily on, and southwest of, Bill Williams Mountain. This potential slight reduction under the Proposed Action would not affect habitat or population trends of the MSO because of the small scale, and long-term nature, of the potential reductions as well as the likelihood that these small possible reductions in area treated would not prevent meeting the objective of reducing the potential for catastrophic wildfires in MSO protected activity centers. These treatments could be designed, located, and prioritised to meet the full fuels reduction objective, even with the potential slight reduction in treatment area.

The effects of the potential slight programmatic reduction in areas treated with fence modifications under the Proposed Action could be long-term, slight reductions in habitat quality and quantity for the pronghorn antelope, Rocky Mountain elk, and mule deer. These potential changes in habitat quality and quantity could result from slight long-term reductions in movement capability and associated access to quality foraging or breeding habitat or waters and possible slight long-term increases in injury and mortality from fences within untreated areas. These slight effects to habitat trends may be tied to long-term, slight reductions in populations of the pronghorn antelope, Rocky mountain elk, and mule deer. However, because the Arizona Game and Fish Department (AGFD) manages populations of these species, population effects would be diminished.

Cumulative Effects

Cumulative effects include past, present, and reasonably foreseeable future activities that are likely to occur. The geographical extent of analysis includes the Sycamore Canyon, Upper Verde River, Cataract, Spring Valley, Upper Partridge Creek, Cedar-Deadman, Miller Wash, Upper Cedar Wash, Lower Cedar Wash, Lee Canyon-Lower Little Colorado River, Redhorse Wash, and Heather Wash watersheds. This analysis area incorporates a landscape scale (i.e., all watersheds encompassing the zone) as well as the home ranges of all of the far-ranging ungulates and birds analyzed and those of shorter-ranging species during their use of the zone.

Actions that have affected the programmatic achievement of wildlife habitat improvement projects include development of the Kaibab National Forest Land Management Plan (Forest Plan) in 1988, amendment of the Forest Plan in 1996, and future revision of the Forest Plan anticipated to start in 2006. Because some wildlife habitat improvement projects were recommended in the Forest Plan, the above actions increase the programmatic achievement of such projects, through increased funding and direction to meet these Forest Plan recommendations. However, these actions have also incorporated many standards and guidelines that restrict the amount of area that programmatically can be treated because of the need for mitigation and minimization measures. Examples of measures that limit the amount of programmatic treatment area include Mexican spotted owl species and microhabitat surveys, northern goshawk surveys, heritage resource surveys, visual and recreation restrictions, noxious weed restrictions, and range management restrictions. As a result, the current trend in programmatic achievement of wildlife habitat improvement projects has been balanced between increased funding and direction and more restrictive guidelines.

The Proposed Action could result in a cumulative effect of slightly decreasing the current balanced trend in programmatic achievement of wildlife habitat improvement projects. This cumulative effect could slightly decrease habitat improvement for the northern leopard frog, cinnamon teal, Wilson’s phalarope, pronghorn antelope, Rocky Mountain elk, mule deer, turkey, northern goshawk, red-naped sapsucker, Williamson’s sapsucker, Chihuahua savannah sparrow, Navajo Mexican vole, ferruginous hawk, golden eagle, northern harrier, prairie falcon, and Swainson’s hawk.

Sensitive Plants

Affected Environment

Sensitive plants are those species that the US Forest Service (FS) believes are sufficiently constrained in habitat or vulnerable to changes in habitat that they warrant special consideration during project planning and implementation in order to ensure that they do not endure irrevocable negative impacts. They are not currently listed by the US Fish & Wildlife Service as Threatened or Endangered; part of the FS goal for these plants is to avoid the need for such listing. Species on the sensitive plant list for the Kaibab National Forest which are known to occur or have the potential to occur are: Penstemon nudiflorus, Arenaria aberrans, Astragalus rusbyi, Chrysothamnus molestus, Hedeoma diffusa, Erigeron saxatilis, and Cimicifuga arizonica. These occur in a variety of habitats, from meadows, to dense forest, to rock outcrops. Each species is vulnerable to changes in its habitat. They vary in their tolerance of disturbance that does not have long-term habitat consequences.

The proposed Forest Plan amendment does not propose specific actions. Rather, it assigns broad classes of scenic quality and recreational opportunities to landscapes within the Forest. It influences which future land uses are deemed appropriate for certain areas. Because of this, it has a slight potential to affect plant habitat and populations.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

All known populations of sensitive species are stable. They are in equilibrium with the prevailing recreation and other land uses that affect them. The No Action alternative would maintain the general types, intensities, and extents of activities and development that currently exist. Therefore, it is not expected to have noticeable negative effects on sensitive plant species. Likewise, it will not have beneficial effects.

Cumulative Effects

Because the No Action alternative has little or no effect on sensitive species, there are also no cumulative effects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Adopting new delineations and standards for recreation and scenic quality may increase human use in some areas and decrease it in others. Decreasing use or maintaining/improving visual quality, as could occur in areas designated semi-primitive or roaded-natural, would have neutral to slightly beneficial impacts on sensitive species. Increased use or allowing more highly altered scenery than currently exists, as in the rural and roaded-modified designations, could have negative impacts on plant habitat (soil disturbance, loss of shade) or on the plants themselves (trampling).

Cumulative Effects

Cumulative effects cannot be assessed because the nature and location of possible changes are unknown. Impacts to sensitive species are evaluated and mitigated through planning for specific projects.

Heritage Resources

Affected Environment

The South Kaibab Zone (Williams and Tusayan Ranger Districts) contains 5874 heritage resources. These heritage resources include a wide variety of prehistoric artifact scatters, pueblos, cliff dwellings, rock art, historic cabins, abandoned logging railroad grades and traditional cultural places important to our neighboring tribes. South Kaibab Heritage Resource specialists protect, interpret, research and manage these sites according to Sections 106 and 110 of the National Historic Preservation Act of 1966, as amended.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

The no action alternative would have no direct or indirect effects to any heritage resources. South Kaibab Zone heritage resource specialists would continue to manage heritage resources to the standards and guidelines of the Forest Plan and in accordance with the National Historic Preservation Act of 1966, as amended.

Cumulative Effects

There would be no cumulative effects of this alternative on Heritage Resources.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Alternative 2 would have no direct effects to any heritage resources. Should any plans be considered ground-disturbing undertakings, heritage resource specialists would consider those projects subject to the Section 106 process of the National Historic Preservation Act of 1966. South Kaibab Zone heritage resource specialists would conduct appropriate consultations with both neighboring tribes and the State Historic Preservation Office.

Because an additional 13000 acres would be added to Semi-Primitive Non-Motorized areas, Alternative 2 would have indirect benefits to heritage resources. Many of these areas have numerous, fragile heritage resources. Since alternative 2 would reduce motorized access on within these areas, there would likely be a reduction of uncontrolled recreational effects to heritage resources. These impacts currently include damage from off road driving, campsites within boundaries of archaeological sites and illegal removal and excavation of archaeological sites and materials.

Cumulative Effects

There would be no cumulative effects of this alternative on Heritage Resources.

Lands and Minerals Management

Affected Environment

Lands Special Uses Management: There are approximately 230 Special Use authorizations on the South Zone for such uses as utility corridors, roads and highways, communication sites and water pipelines and storage facilities. Elevation ranges from approximately 4500 – 9300 feet. Many of these uses have been in place for several decades and would continue to be authorized and managed. There is potential for future proposals, applications, permits and other land authorizations.

Minerals Management: There are approximately 100 contract quarry areas and 23 mining claims for sandstone on the South Zone broken into two areas, Ash Fork and Drake. There are several cinder pits throughout the Zone that are used by the Forest Service, contractors, or the general public. Mineral operations range in elevation from approximately 4500 – 7000 feet. There are several uranium claims near the Grand Canyon on the South Zone. There is potential for future exploration and development of mining claims on the South Zone.

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

Lands Special Uses Management: The no action alternative would result in continued management of special uses within the standards and guidelines of the Forest Plan. Mitigation measures would be required to protect recreation values and sensitive scenic resources.

Minerals Management: The no action alternative would result in continued conflict with the ROS/SIO standards and guidelines for the quarries. No action would result in several quarries and mining claims that would continue to be out of compliance with the Forest Plan by not meeting SIO and ROS class levels. Those quarries and mining claims would need to be reclaimed at the earliest convenience to meet Forest Plan direction. This alternative would continue to restrict new mineral operations in foregrounds of some sensitive travel corridors and semi-primitive non-motorized ROS areas per Forest Plan direction.

Cumulative Effects

Lands Special Uses Management: There would be no cumulative effects of this alternative on special uses.

Minerals Management: The number of quarries and claims that continue to be out of compliance with existing Forest Plan direction could increase.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Lands Special Uses Management: The proposed action alternative would result in more efficient planning and a better understanding of the standards and guidelines through use of the Guidebook. We would have better direction for initial screening of proposals and modifying applications prior to authorizing special uses. There would be more sensitive travel ways identified, which could result in an increase in mitigation measures required of special use permit holders.

Minerals Management: The proposed action alternative would result in an increased ability to permit and operate quarries in compliance with the ROS/SIO guidelines in the Forest Plan. This alternative would have no negative effect with on-going mineral activities, and would allow for surface occupancy. However, new claims located in certain areas would likely have additional mitigation measures incorporated during the Operating Plan approval process. We would have better direction in our long- term management goals for mineral resources. This alternative results in clarifying current Forest Plan minerals standards in some EMA's as guidelines, which would not require a Forest Plan amendment if those guidelines cannot be met for a particular project.

Cumulative Effects

Lands Special Uses Management: The cumulative effects would be more consistent management with better direction and integration of other resources. The proposed action should result in more efficient planning and screening of new proposals.

Minerals Management: The cumulative effects would be more consistent management with better direction and integration of other resources.

Noxious Weeds

Affected Environment

Noxious weeds are plant species that are regulated by the state or the federal government because of their unacceptable environmental, economic, or health and safety impacts. The south zone of the Kaibab NF is fortunate to be infested with only a handful of species, mostly occurring in small, dispersed populations. Neighboring National Forests have serious noxious weed problems. Since the Kaibab shares boundaries, trails, and major transportation and utility corridors with those forests, there is a high potential for their weed problems to expand onto us. When developing management policy and activities, noxious weed prevention is an important consideration.

The proposed Forest Plan amendment does not propose specific actions. Rather, it assigns broad classes of visual quality and recreational opportunities to landscapes within the Forest. It influences which future land uses are deemed appropriate for certain areas. Because of this, it has the potential to affect noxious weed habitat and populations. Noxious species that are known or suspected to occur on the south zone of the Kaibab NF are listed in Table 7.

Table 7. Known or Suspected Noxious Weeds on the South Zone

Common Name	Scientific Name	Objective
Leafy Spurge	Euphorbia esula	Eradicate
Russian knapweed	Acroptilon repens	Contain / Control
Diffuse knapweed	Centaurea diffusa	Contain / Control
Spotted knapweed	Centaurea maculosa	Eradicate
Scotch thistle	Onopordum acanthium	Eradicate / Control
Russian olive	Elaeagnus angustifolia	Contain / Control
Tamarisk	Tamarix sp.	Contain / Control
Dalmatian toadflax	Linaria dalmatica	Contain / Control
Bull thistle	Cirsium vulgare	Contain / Control
Cheatgrass	Bromus tectorum	Contain / Control

Environmental Consequences

Alternative 1 (No Action)

Direct and Indirect Effects

The No Action alternative would maintain the general types, intensities, and extents of activities and development that currently exist. Recreation currently is having little to no affect on the distribution or size of noxious weed populations. Maintaining the current situation would not, by itself, cause an increase or decrease in noxious weeds.

Cumulative Effects

Because the No Action alternative has little or no effect on noxious weeds, there are also no cumulative effects.

Alternative 2 (Proposed Action)

Direct and Indirect Effects

Adopting new delineations and standards for recreation and visual quality could increase human use in some areas and decrease it in others. Decreasing use or maintaining/improving visual quality, as could occur in areas designated semi-primitive or roaded-natural, would have neutral to slightly beneficial impacts. Less new weed habitat would likely be created in these areas, and there would be less potential for spreading new or existing weeds. Increased use or allowing more highly altered scenery than currently exists, as in the rural and roaded-modified designations, could have negative impacts. Any activity that disturbs the soil surface creates new noxious weed habitat. Increased human presence increases the likelihood of introducing new weeds or spreading existing populations.

Cumulative Effects

Cumulative effects cannot be assessed because the nature and location of possible changes are unknown. Noxious weed impacts are evaluated and mitigated through planning for specific projects.

Roads and Access, Soils, Watershed, Wetlands

The proposed Forest Plan amendment does not propose specific actions. Rather, it assigns programmatic direction for outdoor recreation settings and scenery management within the South Zone. It will have some influence on future land uses and project proposals on the South Zone, in concert with other resource management needs and objectives. Therefore, some resources and activities are expected to see no direct or indirect negative or beneficial effects. Since there are no changes in access, and road closures or road construction proposed, there are no expected negative or beneficial effects to roads and access. Since there are no changes proposed to the existing motorized restriction and closure areas in place to protect unique geology, sensitive soil, vegetation, wetland habitats, and no specific actions proposed or anticipated that could affect soils or watershed, the proposed action would not have negative or beneficial effects.

Economics

Since the proposed Forest Plan amendment does not propose specific action, but rather assigns programmatic direction for outdoor recreation settings and scenic management, direct and indirect economic effects would be negligible. Slightly more efficient project planning could negligibly decrease overall project costs, and per acre project implementation costs may slightly increase due to the potential for increased mitigations under the Proposed Action. Conversely, it is expected that there would be a gradual improvement of non-priced benefits (benefits for which no monetary value or price can be determined) of visual quality, wilderness, recreation settings, and heritage resources, at a minimum. The magnitude of anticipated changes in project costs and the value of non-priced benefits are not considered to be significant, and do not warrant an in-depth economic analysis.

Chapter 4 – Consultation and Coordination

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Interdisciplinary Team Members

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Mark Herron	Kaibab NF, South Zone, Silviculturist/Forester
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Neil Weintraub	Kaibab NF, South Zone, Heritage Program Manager
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Federal, State and Local Agencies

Arizona Department of Game and Fish

Tribes

Havasupai Tribe
Hopi Tribe
Hualapai Tribe
Navajo Nation
Yavapai-Prescott Tribe
Zuni Tribe